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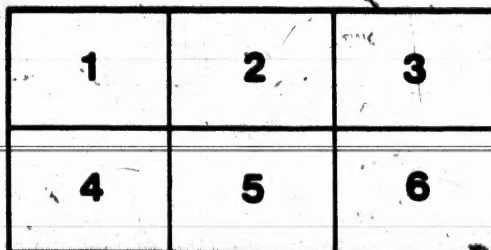
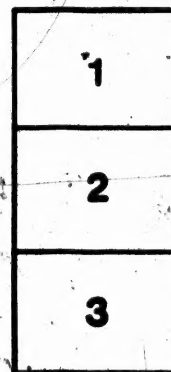
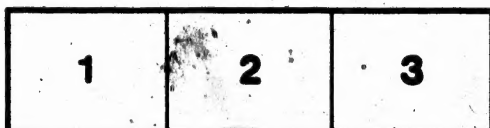
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# Great Western Railway.

## CONDITIONS of CONTRACT for COVERED GOODS WAGGONS.

### SPECIFICATION.

#### GENERAL DIMENSIONS.

|                                                                          | ft. in.              |  |
|--------------------------------------------------------------------------|----------------------|--|
| Length over the Body and Frame .....                                     | <del>17 0</del> 18 6 |  |
| Width over the Body .....                                                | 7 4                  |  |
| Width between the Iron Side Frames .....                                 | 6 7                  |  |
| Width between the Axle Guards .....                                      | 6 8 1/2              |  |
| <del>Width over the Wood Side Frames .....</del>                         | <del>6 2</del>       |  |
| Width from centre of Journals, of Axles, and Bearing Springs .....       | 6 4                  |  |
| Width between centres of Buffers .....                                   | 5 9                  |  |
| Width between centres of Side Chains .....                               | 1 1                  |  |
| Height of centres of Buffers, Drag and Side Chains, from the Rails ..... | 3 3                  |  |
| Length of Bearing Springs from centre to centre of Bearing Shoe .....    | 3 0                  |  |
| Diameter of Wheels in centre of tread .....                              | 3 6                  |  |
| Distance of Wheels apart, centres .....                                  | 9 9                  |  |
| Length of Body inside .....                                              | <del>16 0</del> 15 0 |  |
| Width of Body inside .....                                               | 6 10                 |  |
| Height from floor to roof boards, in centre .....                        | 6 8                  |  |
| Height from floor to roof inside the cant-rails .....                    | 6 0                  |  |
| <del>Width of Doors in clear of rebates .....</del>                      | <del>6 0</del>       |  |
| Height of Doors in clear of rebates .....                                | 6 0                  |  |
| Height of Floor from Rails .....                                         | <del>4 0</del> 5 11  |  |

#### DESCRIPTION AND MODE OF FRAMING.

All the wood framing ~~and stanchions~~ are to be of English Oak; the ~~cant roof sticks~~ to be of ~~English or American Ash~~.

The Floor ~~and Roof~~ Boards, to be of red Pine.

The Covering of the Sides, Ends, and Roof Slides, to be sheet iron, 4 lbs. per foot super, clean, and free from "buckles."

The whole of the Wood Work to be of the best description of their respective kinds, clean, sound, and free from knots and "shakes."

The iron Side Frames are to be 8 inches deep by 4 1/2 inches wide, the full length of the frames in the vertical part, the flange is to be cut away to admit of the corner stanchions bearing fully against the sides. The Oak sole bars are to be 11 inches deep by 3 inches thick, tenoned into the End Frames. The End Frames are to be 14 inches deep by 4 1/2 inches thick, rebated to receive the floor boards and iron panels, and morticed on to the Oak sole bars, diagonal and centre struts, and secured by strap bolts outside the iron slides, and inside by bolts, and by 3 wrought iron knees, two at each corner, and by two T lap plates to the centre struts, firmly screwed up as shewn.

The Transverse Bearers are to be 11 inches deep by  $4\frac{1}{2}$  inches thick, tenoned into the sole bars, and screwed thereto by two  $\frac{3}{8}$  inch bed bolts at each end.

The Diagonals are to be 12 inches deep at the end bearers, 11 inches deep at the transverse bearers, by 3 inches thick, and tenoned into each and secured to the End Frames by the above described 8 wrought iron knees and bolts, and to the transverse bearers by two wrought iron knees, one at each bearer, 6 inches wide each.

The two Middle Longitudinal Struts are to be 11 inches deep by 3 inches thick, and tenoned into the transverse bearers.

The two Central Longitudinal Struts under the draw bars are to be 3 inches deep by 3 inches thick, tenoned into the end and transverse bearers, and secured by bolts to the knees and T plates.

The two Short Transverse Middle Bearers are to be 4 inches deep by  $4\frac{1}{2}$  inches thick, tenoned into the sole bars and middle longitudinal struts.

The two Transverse Bars between the wheels are to be 4 inches deep by 3 inches thick, notched into the diagonals and bolted thereto.

The four Short Transverse Bars over the wheels are to be 4 inches deep by 3 inches thick, notched on to the sole bars and diagonals.

The Axle Guards are to be clean, sound and well made forgings of equal thickness throughout, except the projecting shoulder under the iron sides, and made perfectly straight and true between the horns, and fixed equidistant from the centre of the draw bar, and at right angles to the plane of the framing, vertically and horizontally, and bolted through the iron and oak Side Frames with cup-headed and square necked bolts screwed inside.

The horns are to be  $7\frac{1}{2}$  inches between for admitting and confining the Axle Boxes; the ends of the horns to be braced with straps of iron 2 inches wide by  $\frac{3}{8}$  inch thick, and fastened with  $\frac{1}{2}$  inch square necked bolts.

The Draw Bars, Spring Loops, Coupling Chains, and Hooks and Face Plates, are to be strong, well and soundly forged, filed and fitted, a split cotter to be let through the square neck of the Draw bar, 3 inches from the end frame, to form a stop to the action of the draw spring. The side coupling or check chains to be attached to the end frames by strong eye bolts, with nut, large washer, and vulcanized India rubber ring inside the bearer, two to have hooks, and two to have long links at alternate sides, as shewn.

The face plates for the shoulders of the draw bars and side chains, are to be of wrought iron, of the length and width shewn, by 1 inch thick.

Two Hauling Staples to be fixed to each Wagon, one on each side, at alternate angles, and clear of the break lever.

Through bolts, 1 inch in diameter, to be let through the frame, and screwed up with nuts and washer at each end against the end and transverse bearers, as shewn.

Four wrought iron plates  $\frac{1}{2}$  inch thick to be let in flush, and screwed to the floor over the centre of the wheels.

The Bearing Spring Shoes to be clean and well-made castings, with flanges to keep the springs in place, and fastened to the under side of the oak sole bar with large counter-sunk screws.

## THE BODY.

The corner pillars are to be  $4\frac{1}{2}$  inches square, rebated on the inner angle  $1\frac{1}{2}$  inches each way to receive the iron panels, and to be fastened by corner plates and bolts, and bed bolts with clip washer, as shewn. The pillars on each side of the doors are to be  $3\frac{1}{2}$  inches wide by  $3\frac{1}{2}$  inches thick, rebated to receive the doors and the iron panels, and bound at top and bottom by the door hinges. The intermediate stanchions of the sides and ends are to be 3 inches wide by 3 inches thick, tenoned into the top and bottom end frames, and secured at the bottom by strap bolts and at the top by lap plates.

The door frames are to be two inches thick, rebated for the iron panel, hinged and fastened with sliding bolts, throwing slides into the top and bottom frame, and with hasp to receive a padlock in centre.

The roof sticks supporting the slides to be of the size and form, and faced and stiffened with iron plates, in the manner shewn on the drawing. The roof boards to be covered with the best carriage roof cloth, according to sample. Bevel iron bar ties to be inserted round the sides and ends to brace the pillars and stanchions and support the iron panels, and to be let through the corner pillars in a bolt end and screwed up against them.

Each Waggon to have a break, long lever and guard rack, to work blocks on two wheels, the whole to be made of the best scrap or bar iron, and equal in finish to black engine work, and in accordance with the drawing; the blocks to be Willow or Poplar, cut to the proper template, and bolted to the hanger with  $\frac{3}{4}$  inch bolts with sunk nuts.

The iron panels to be counterbored and screwed to the framing with screws  $1\frac{1}{2}$  inches long by  $\frac{1}{2}$  inch diameter at the neck.

"Address Card Holders" to be screwed to the lower board in the centre on each side.

The Buffers are to be of an approved construction of the general size and outline shewn, with wrought heads and of about eight pounds value per set of four Buffers:

The Draw Springs to be of the description shewn on the drawing.

The Bearing Springs are to be 3 feet long from centre to centre of the point of bearing on the shoe, and 3 feet 3 inches extreme length, the point of the top plate is to be thickened and rounded where it bears on the shoe, the back plate is to be 3 inches by  $\frac{1}{2}$  inch, and the 10 other plates 3 inches by  $1\frac{1}{8}$  inch. All to be made from the best quality of cast spring steel, manufactured from Swedish iron, and with such camber as with the strain of the empty waggon shall bring them to the form shewn on the drawing. The whole of the Springs to be finished in the most workmanlike manner, and proved to the straight under a testing machine.

The Axle Boxes are to be clean, sound, strong and well made Castings of approved pattern, with "Vaucher's Patent Metal Bearings," carefully fitted, bedded, bored, and scraped out to fit the double coned Journals.

The Grease Box Covers are to be well jointed in the hinges and closely fitted on the Boxes; each cover is to have a spring to keep it from rattling. The back of the boxes is to be fitted with "Normanvilles" Patent Collar Washers, the grooves for the collars, and the Axle Guard Horns are to be well and truly formed, and the holes for the spring clip bolts to be rimmed out true to one uniform diameter.

The Clip Bolts and Plates are to be well and neatly made and fitted, and of approved patterns.

Packings of hardwood shaped as shewn, for the top of the springs, are to be put between the clip bolts and the springs, and the nuts screwed tight to keep the whole together.

## THE WHEELS AND AXLES.

The Axles are to be 6 feet 4 inches long from centre to centre of the journals, by 5 inches diameter in the nave, reduced with a gradual hollow taper to  $4\frac{1}{2}$  inches diameter in the centre between the wheels.

The Journals are to be  $6\frac{1}{4}$  inches in length, of the double coned form, 3 inches in diameter in the centre, and  $4\frac{1}{2}$  inches in diameter at the shoulders. The Cones are to be turned perfectly true, of equal angles and diameters, and the axle to an uniform gauge of 5 inches diameter to fill the naves, and chased to receive a  $\frac{3}{4}$  inch by  $\frac{3}{4}$  steel key.

The Wheels are to be of solid wrought iron 3 feet 6 inches in diameter at the centre of the tread.

The Spokes are to be 9 in number  $2\frac{3}{4}$  inches wide by  $1\frac{1}{2}$  inch thick inside the rim, tapering to  $3\frac{1}{4}$  inches wide by  $1\frac{1}{2}$  inch thick,  $3\frac{1}{4}$  inches from, and 2 inches thick at, the nave.

The Rim is to be 1 inch in thickness when finished,  $3\frac{1}{4}$  inches in width on the dove-tailed periphery and  $2\frac{3}{4}$  inches wide inside the dove-tail, and to be welded solid throughout.

The Nave is to be  $6\frac{1}{2}$  inches in length on the Axle, by  $8\frac{1}{2}$  inches diameter on the face, and 9 inches diameter in the centre, soundly welded together, clean and well formed at the Spokes, bored out to one uniform gauge of 5 inches diameter to fit the Axle; slotted opposite the end of a spoke to receive the steel key, faced on both ends, and turned to shape in the lathe up to the shoulders of the spokes. /

The Tyres are to be 5 inches wide by  $1\frac{1}{2}$  inches thick in the centre of the tread when finished. They are to be soundly welded and well blocked or rolled, and made true laterally on a side face plate, then turned and bored out to the proper section, as shewn by the drawings, and to an exact gauge or diameter, so as to fit any of the wheels (which are also to be turned to one uniform gauge) and shrunk on and secured thereto by "Gibson's Patent Annular Key Fastening." When finished, each wheel shall balance accurately—that is to say, the centre of gravity shall be exactly in the centre of the wheel, and such measures shall be adopted to test this as the Engineer may direct.

The Axles shall be either of the Patent Shaft and Axletree Company's, or Thorneycroft and Company's.

The Tyres shall be either Bowling Company's, Patent Shaft and Axletree Company's, or Thorneycroft's Charcoal.

The Wheels are to be keyed on the Axles to a standard gauge, equidistant from the centres of the journals, and 4 feet  $9\frac{1}{2}$  inches in the clear of the inside edges of the tyres, and otherwise to fit exactly the standard gauge. The whole to be made according to the drawing, and to the satisfaction of the Engineer.

The Tyres, Axles, and forged Skeletons, are to be of the best materials of their respective kinds. The Wheels, when keyed on, are to be perfectly concentric with, and equidistant from the journals, and true on both edges. All Wheels, Tyres or Axles proving defective in workmanship or materials, after due trial, will be rejected, and are to be replaced at the expense of the manufacturer. All necessary gauges are to be provided by him, and they must be approved before being used. None of the work is to be painted until examined by the Engineer or his Inspector, and approved by the Engineer.

#### PAINTING.

The whole of the wood work outside and underneath to be painted with three coats of oil colour, of a brown shade of approved description.

All the iron work, including the wheels and axles, to be painted with two coats of black.

The Company's Initials, the name of the Waggon, the load to be carried by it, and its number, to be painted on each side, in large letters and figures, to correspond with the rest of the Company's Waggon.

#### GENERALLY.

The whole of the materials and workmanship shall be of the best description of their respective kinds, and in strict accordance with the form, arrangement and intent of the drawings and Specification.

The Manufacturer is immediately to prepare a complete set of full sized working drawings of the several detail parts for the Engineer to examine, and if approved, to sign, and duplicate copies of the same to be retained by the Engineer, and should any deviation from such drawings be discovered in the articles when executed, such articles will be rejected, unless such deviation shall have been previously sanctioned by the Engineer in writing.

The Manufacturer is to pay all Patent Right and Royalties which may be due to any Patentee or other persons, so as to relieve the Company from all claims in respect of any costs beyond the contract price.

No advantage is to be taken of any omission of detail in this Specification, or in the drawings, as full explanation will be given should any part not be sufficiently described, shewn, or understood.



## COMPLETION AND CONDITIONS.

The parties tendering are to fill in the numbers of the first, and subsequent deliveries, and the times at which they will undertake to complete, and deliver them respectively.

The whole of the work embraced by this Contract is to be completed, and the Waggon delivered, on or before, the                      day of                      1857. The first delivery of                      to be made on, or before the                      day of                      , and the remainder in equal numbers per week afterwards, until the completion. And should the Manufacturer fail so to deliver all the Waggon by such date, he shall allow to the Company, by way of diminution in price, a sum per week, equal to one half per cent, on the value of the Waggon in arrear, and for each week after such                      day of                      1857, until the Waggon shall be delivered.

The Tender shall state the price per Waggon, delivered free on the Company's (Narrow Gauge) Rails under each description of Axles, and Tyres, such price to be the purchase price at the times of delivery, if the Directors shall so elect, and it shall also be the basis for an agreement, to let the Waggon on hire for a fixed term of years, with the option to the Company of purchase at the expiration of any year during such term, after having given 6 month's notice to the Contractor, at a fixed price each, for each year.

The Tender shall also state the Amount of Yearly Rent for each Waggon, under the separate heads, including all repairs; at which the Contractor will agree to let them to the Company.

The Waggon to become the property of the Company at the expiration of the agreed term, at, and on payment of the price fixed for each, for the last year of the said term.

# GREAT WESTERN RAILWAY.

## TENDER FOR

## "COVERED WAGGONS."

To the Directors of the Great Western Railway Company,

GENTLEMEN,

I, or We,

offer to supply you with ~~of~~ <sup>of</sup> ~~Waggons with Hopper Bottoms~~ <sup>Waggons</sup> manufactured and delivered in accordance with the foregoing Specification, the drawings therein referred to, and Stipulations contained in the "Conditions of Contract," delivered free on the Company's Narrow Gauge Rails, in the numbers, and on or before the dates, entered by in the foregoing Conditions, viz.—The first delivery of Waggons, to be made on, or before the day of 1857, and the remainder in equal numbers per week afterwards, until the completion, on or before day of 1857, with either of the following description of Axles, and Tyres, at the following prices per Waggon, for each respectively, as the purchase prices on delivery, or as the basis on which we agree to let the Waggon upon hire, for a term of years.

We shall also be prepared to furnish two satisfactory sureties, to join with ourselves in a bond, for an amount equal to 10 per cent upon the gross amount of the accepted Tender, conditioned on the due fulfilment of this Contract.

|                             | No. 1.                                                                            |    |    | No. 2.                                                                |    |    | No. 3.                                                                      |    |    | No. 1.                                            |    |    | No. 2.                                            |    |    | No. 3.                                            |    |    |   |    |    |
|-----------------------------|-----------------------------------------------------------------------------------|----|----|-----------------------------------------------------------------------|----|----|-----------------------------------------------------------------------------|----|----|---------------------------------------------------|----|----|---------------------------------------------------|----|----|---------------------------------------------------|----|----|---|----|----|
|                             | Price per Waggon, with Bushing Tyres, and Patent Shaft, Thornycroft & Co's Axles. |    |    | Price per Waggon, with Patent Shaft, Co's Patent Axles, and 8" Tyres. |    |    | Price per Waggon, with Thornycroft's Axles, and Patent Charcoal Iron Tyres. |    |    | Amount of Rent, per annum, including all repairs. |    |    | Amount of Rent, per annum, including all repairs. |    |    | Amount of Rent, per annum, including all repairs. |    |    |   |    |    |
|                             | £                                                                                 | s. | d. | £                                                                     | s. | d. | £                                                                           | s. | d. | £                                                 | s. | d. | £                                                 | s. | d. | £                                                 | s. | d. | £ | s. | d. |
| On delivery .....           |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| At expiration of 1 year ... |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 2 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 3 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 4 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 5 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 6 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 7 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 8 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 9 " "                 |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |
| " " " 10 " "                |                                                                                   |    |    |                                                                       |    |    |                                                                             |    |    |                                                   |    |    |                                                   |    |    |                                                   |    |    |   |    |    |

## PAYMENT.

Payment to be made by the Company, if the Waggons are agreed to be purchased on delivery, within months after date of delivery, and Certificate of their completion, in accordance with the Contract. If agreed for the Waggons to be taken on hire, payment of the rent to be made by the Company, every months.

Dated this

day of

1857.

Signature,

*W. H. Ward waggons*

